malignant disease has occurred the original cysts were malignant, is in the writer's opinion not always the true one.

[Although cancer in rabbits is extremely rare, if it occur at all, a solitary case like this, no matter how convincing, must be viewed with suspicion until mere coincidence is ruled out by further experiments.—ED.]

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF
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Oil as a Preservative of Meats.—Oil is used in the household in various parts of Italy for keeping meat fresh, and it has been used extensively for ages in preserving wines; but it has long been known that access of air is not thereby wholly prevented, and it has been proved that even the evaporation of water beneath it can proceed to some slight extent. To determine the preservative influence of oil, DR. CONSTANTINE X. HIEROCLÈS (*Archiv für Hygiene*, xxxiii., 155) made a series of experiments. He found that parts of a piece of ordinary beef placed in flasks, covered with oil to a depth of 3 cm. and kept at 7° C., at room temperature, and at 28° C. showed bacterial growth of, respectively, 1845, 2572 and 2950 times the number originally present. Then pieces of sterile meat of various kinds were kept under the same conditions, but in all cases growth appeared after a time, though much of it originated in the oil itself, even though this had been exposed to 100° C. for half an hour. To determine the inhibiting action of oil on bacterial growth he took two fresh agar cultures of each of the following: proteus vulgaris, B. subtilis, B. megaterium and B. anthracis, and to one of each pair he added oil up to the cotton stopper. All eight tubes were kept at 28° C. It was soon demonstrated that the growths under the oil were much less active than the others. He points out that in warm climates the method may be of advantage, since it does not interfere with bacterial multiplication and protects the meat from contamination through contact of insects. Moreover, the outer portions are not dried up, and the whole can be used.

Bedbugs and Fleas as Agents in the Spread of Disease.—More or less evidence has been adduced from time to time to show that bedbugs, fleas, and other insects act as carriers of disease germs. Cases have been reported by CARMICHAEL showing a connection between bedbugs and leprosy, and by CRAIG, connecting this bug with tuberculosis and cancer. The flea, having been observed on rats dying of the plague, is supposed by Simond and Yersin to play a part in the spread of that disease. Now comes a series of carefully conducted experiments by DR. GEORGE H. F. NUTTALL (*Centralblatt für Bakteriologie*, Abth. I., xxiii., No. 15), in which bedbugs and fleas were given the opportunity to transfer anthrax, chicken cholera, and mouse septicæmia. He obtained some bedbugs and allowed them to suck the blood of diseased and dead mice, and then transferred them to healthy mice. Fleas found on diseased mice were similarly transferred. In other experiments the insects were placed upon healthy mice from which the hair had been shaved in spots whereon anthrax matters were painted. Although individual animals were bitten by as many as twenty-nine bedbugs and eight fleas, the results were all negative. Inoculations with the viscera of the bedbugs, however, were uniformly successful, even when considerable time had been allowed to elapse. With anthrax and chicken cholera, infection occurred after four days, and with mouse septicæmia after six. Their excreta also were infective. Infection with the organs of the fleas was unsuccessful eight hours after removal. Nuttall concludes that when these insects bite they remove any transferred organisms immediately by sucking, but that infection can occur when the person being bitten slaps and crushes the insect and then scratches the spot.

Action of Soil on the Plague Bacillus.—DR. Ž. YOKOTE (*Centralblatt für Bakteriologie*, Abth. I., xxiii., No. 24) took mice that had died of infection with plague bacilli placed them in wooden boxes, and buried them in garden soil which was kept from thorough drying. The boxes were exhumed from time to time and the contents examined to ascertain if infective material still existed. The longest time that elapsed between the burying and the demonstration of the still virulent organism was thirty days, and the higher the temperature and the more active the rate of decomposition the shorter the life of the organism. The soil in the immediate vicinity of the boxes was examined for the organisms, but the results were negative.

Concerning the Use of Meat from Diseased Animals.—DR. FRITZ BASENAU (*Archiv für Hygiene*, xxxii., 219) makes some recommendations which may have some economic importance. A certain group of diseases seems especially liable to render meat injurious, but an animal slaughtered on account of sickness is not necessarily unfit for food, especially if the food be not eaten raw. Ordinary macroscopic examination will not show whether any infection resides in the meat itself, but bacteriological and feeding experiments will determine whether it may be used. He recommends that in case an animal is slaughtered while sick and it is desired to use the flesh as food, the bacteriological examination be begun within twenty-four hours, during which interval any organisms present will probably multiply. In healthy animals no bacteria are found within the muscles even after long keeping. At the time of starting the bacteriological examination feeding experiments should be begun also, mice being fed upon the raw meat, and others with meat that has been kept at the temperature of boiling water for an hour. If no colonies are observed in twenty-four hours, and no bacteria are demonstrated by the microscope, the meat is good. If colonies are produced, reliance must then be placed on the feeding experiments. If the mice fed on raw meat die and the others survive, the inference is that the meat may be cooked and eaten; if both sets die, the meat may not be used as food. Basenau examined the meat of a number of cattle that had suffered from various septic processes, and found it to be more or less rich in bacteria. The diseases included chronic pyæmia, septicæmia cryptogenetica, abscessus lienis traumaticus, paralytic puerperal fever, and perforation peritonitis. The bacteria found approach closely his *bacillus bovis morbificans*, but with some differences. All killed mice used in feeding experiments quickly and surely. Some produced poisonous matters which could withstand even the boiling temperature. In all probability these bacteria are pathogenic to man, for they resemble or are identical with the bacteria which have been isolated as the exciting cause in different outbreaks of meat-poisoning.

DR. LARDIER (*Revue d'Hygiène*, 1898, 431) instances a case in which a cow dead of anthrax was eaten by a large number of people without the slightest ill effects. Not so fortunate, however, were those who handled the carcass, which was the cause of a series of fatalities. Two men who helped skin the animal had typical charbon, but recovered. A calf belonging to one of them was seized with the disease and died, and in the removal of its hide another man was pricked, and, in consequence, died. The head of the cow was sold to a woman, who wounded herself in cutting it up, and died. The skin of the cow was sold to a man who stored it in a shed on his farm, and a few days later one of his cows dying of the disease, a post-mortem examination was made, and in the process the operator wounded himself, and died. In addition, from seven to ten cats that ate of the refuse and blood of the original cow all died suddenly shortly afterward.

Zinc as a Normal Constituent of Drinking-water.—CARL TH. MORNER (*Upsala Läkareförен*, 1898, iii., through *Hygienische Rundschau*) examined the water of a well in the country near Upsala, which, in spite of a peculiar taste, had been in daily use for a year. Analysis showed traces of iron and no less than 8 milligrammes of zinc to the litre present as a carbonate. No disturbance whatever of the health of any of the persons who had been using the water constantly during the year had occurred.

[This case adds to the evidence against the cumulative action of zinc. Two wells which yield water containing notable amounts of zinc are known to have been in constant use, one of them as the sole public well of a small German town, for more than a century, without, as far as known, causing any disturbance of health. There are several springs in the southern part of Missouri which contain very much larger amounts of zinc than any of the above mentioned.—C. H.]

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